SCIENCE IN YEAR 1

Autumn 1 - Physics - Seasons

How can we measure the weather?

WHAT ARE SEASONS?

1

We describe how the weather changes across the seasons and observe and describe how day length varies by exploring the average number of hours of day light in autumn/winter and in spring/ summer.

THE AUTUMN

2

We observe and describe the weather in autumn then we gather and record data to help in answering questions by recording the weather, temperature, rainfall and wind direction in autumn.

REAL LIFE SCIENCE!

3

We carry out observations of the weather by going on an Autumn walk in our local area and record what we see.

CHANGES FROM AUTUMN TO WINTER

4

We observe and describe the weather in Winter then we gather and record data to help in answering questions by recording the weather, temperature, rainfall and wind direction in winter and compare this to the Autumn.

CHANGES FROM WINTER TO SPRING

5

We observe and describe the weather in Spring then we gather and use recorded data to help in answering questions about the weather, temperature, rainfall and wind direction in Spring and compare this to the other seasons.

CHANGES FROM SPRING TO SUMMER

6

We describe the weather in summer then we gather and use recorded data to help in answering questions about the weather, temperature, rainfall and wind direction in Summer and compare this to the other seasons.

Vocabulary taught: seasons, spring, summer, autumn, winter, windy, sunny, overcast, snow, rain, temperature

SCIENCE IN YEAR 1

Autumn 2 - Biology - Plants

Why are there lots of different trees?

WHAT TREES CAN WE FIND

We go on a walk to look at the trees that surround our school and identify the names and types of trees that we find.

1

STRUCTURE OF A TREE

2

We look carefully at the different parts that make up a tree, such as roots, trunk, branches and leaves and what jobs they do.

DIFFERENT TYPES OF TREES

We observe and describe the differences between deciduous and evergreen trees and link this back to our work on seasons.

3

OUR OBSERVATIONS

4

We look closely at different types of leaves that we have collected and study how they are different/ similar and use a simple table to classify them using a range of characteristics.

TREES ARE HABITATS

We find out about the different animals that use trees as their home and what makes them successful habitats.

5

6

Vocabulary taught: seasons, spring, summer, autumn, winter, windy, sunny, overcast, snow, rain, temperature

SCIENCE IN YEAR 1

Spring 1 - Chemistry - Everyday materials

What material is best to use for an umbrella?

WHAT MATERIAL IS IT MADE FROM?

1

We study the materials of wood, plastic and glass and identify the characteristics that make up these materials. We then classify objects made from these materials.

WHAT MATERIAL IS IT MADE FROM?

2

We study the materials of metal, rubber, brick/rock and identify the characteristics that make up these materials. We then classify objects made from these materials.

WHAT IS THE BEST MATERIAL?

3

We recap the last two lessons and investigate further, using a range of objects, the characterisitcs of each material and why certain objects are made using these materials.

PLANNING AN EXPERIMENT

4

We investigate the properties of materials to try to answer the question: which materials would be best to use to make an umbrella? We plan an experiement to test our ideas and focus on the idea of a fair test.

OUR SCIENCE EXPERIMENT

5

We carry out our experiment to find out which material would be best to use for an umbrella, testing at least five different materials.

EVALUATION

6

We write up the findings of our experiement, using the format that scientists use: equipment, method, conclusion.

Vocabulary taught:
hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy/not bendy, waterproof/not waterproof, absorbent, opaque,

SCIENCE IN YEAR 1

Spring 2 - Biology - Animals including humans

How do animals stay alive?

1 NAMING BODY PARTS

We investigate the question: are all animals the same? by looking at animals and their body parts.

2 WHAT ANIMALS CAN WE GROUP?

We study the different types of animals and sort them into carnivores, herbivores and omnivores.

3 FISH AND AMPHIBIANS

We look at how animals can be classified into different groups and focus on what characteristics do fish and amphibians have that make them a unique group. We then label parts of animals

4 REPTILES, BIRDS AND MAMMALS

We look at how animals can be classified into different groups and focus on what characteristics do reptiles, birds and mammals have that make them unique groups.

5 SIMILARITIES AND DIFFERENCES

We recap the previous lessons where we have classified animals into different groups. We then compare each group and complete venn diagrams to show what is the same and what is different

6 WHERE DO HUMANS FIT?

We focus this lesson on what makes humans unique as a mammal and how we have evolved and are different to all other animals.

Vocabulary taught: herbivore, carnivore, omnivore, diet, mammals, reptiles, birds, amphibians, fish, similarities, differences,

SCIENCE IN YEAR 1

Summer 1 - Biology - Plants

What plants grow on the Isle of Wight?

PLANTS IN OUR LOCAL AREA

1

We investigate what plants are growing in and around school and discuss the different types we find. We then look at how each plant grows and label the parts of the plants/ flowers that we find.

WILD OR GARDEN PLANT?

2

We recap and study the different types of plants and flowers that can be found locality and investigate which ones are garden flowers and plants and which ones are wild (weeds) and why these are different.

THE STRUCTURE OF A PLANT

3

Using real life examples, we study and draw the structure of a plant, identifying the key parts and the role that they play in making sure the plant stays strong and healthy.

WHERE DO PLANTS GROW?

4

We look at common plants and find out where they are most likely to grow.

PLANTING POTATOES

5

We plant our own potatoes so we can understand the process that is needed in order to grow our own vegetables! Over time, we look after then dig up the potatoes and eat them!

OUR OBSERVATIONS

6

We discuss our findings about growing potatoes and write about what we have found.

Vocabulary taught:
leaves, plant,, root, seed, bulb, flower, stem, wild, garden, deciduous, evergreen, fruit, vegetable, grow

SCIENCE IN YEAR 1

Summer 2 - Biology - Our Senses

How do we use our senses?

OUR BODIES

1

We recap what we know about our bodies and identify different body parts and the job that they do for us each day. We discuss what senses are and how they are used.

OUR SIGHT

2

We investigate sight and why this is an important sense to have . We experiment with what it is like to loose sight and what impact this has on the other senses.

OUR HEARING

3

We investigate hearing and why this is an important sense to have . We experiment with what it is like to loose hearing and what impact this has on the other senses and daily life.

OUR SENSE OF TASTE

4

We carry out a range of experiemtns to find out about our taste buds and why these are so important to our survival and everyday lives. We also learn about the different types of flavours that activate our taste buds

OUR SENSE OF TOUCH

5

We investigate through a range of experiments why touch is an important sesne and how it allows us to make sense of the world around us but to also keep ourselves safe.

OUR SENSE OF SMELL

6

We investigate through a range of experiments why smell is an important sesne and how it allows us to make sense of the world around us but to also keep ourselves safe.

Vocabulary taught:
sight, hearing, touch, taste, smell, head, neck, ear, mouth, shoulder, hand, fingers, leg, foot, thumb, eye, nose, knee, toes, teeth, elbow

SCIENCE IN YEAR 2

Autumn 1 - Biology - Living things and their habitats

Why are there different types of habitats?

1 DEAD OR ALIVE?

we explore, sort, classify and compare the differences between things that are living, dead, and things that have never been alive.

2 WHAT IS A HABITAT?

We identify habitats and give examples for these (pond, forest, sea, meadow, grassland, desert)

3 WHAT CAN YOU FIND IN A HABITAT?

We identify and name a variety of plants and animals in their habitats, including microhabitats (eg. Woodlice under logs).

4 DIFFERENT TYPES OF HABITAT

We compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest.

5 WHAT IS A FOOD CHAIN?

We describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food (sun gives energy to plants – plant eaten by bug – bug eaten by bird – bird eaten by fox)

Vocabulary taught:
biology, Living, dead, never alive, habitats, micro-habitats, food, food chain, leaf litter, shelter, sea shore, woodland, ocean, rainforest, conditions, desert, damp, shade,

SCIENCE IN YEAR 2

Autumn 2 - Chemistry - Use of everyday materials

How can we investigate different materials?

1 WHAT IS ABSORBENCY?

we explore the properties of different materials and make predictions about which would be best at mopping up a spillage of water. We investigate which papers are the most absorbent by choosing a method and working in a group.

2 WHAT MAKES SOMETHING WATERPROOF?

We recap the absorbency of fabrics and then discuss what makes something a waterproof material . We then consider and plan to answer the question: How can we make the fabric waterproof?

3 MAN-MADE OR NATURAL?

We identify and discuss the difference between natural and manmade objects then explore the properties of a range of natural and manmade objects including observing any similarities and differences between the two groups. After classifying objects by their materials, we then state why objects are made from each material.

4 WHY ARE MATERIALS CHANGED TO BECOME WATERPROOF?

We experiment with trying to make paper waterproof with wax and discuss why this process would be beneficial (book covers etc)

5 CHANGING SHAPE

We find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. We carry out an experiment to recycle our old wax crayons and record our observations.

6

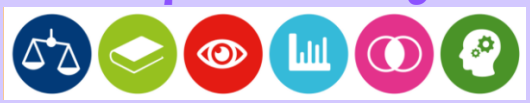
Vocabulary taught:

Chemistry, absorbent, waterproof, fabric, rubber, rock, paper, cardboard, wood, metal, plastic, glass, brick, twisting, squashing, bending

SCIENCE IN YEAR 2

Spring 1 - Biology - Plants - Part 1

What do plants need to grow?



PLANTS REVISITIED

1

we recap what we learned in Year 1 about plants and identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.

LIFE CYCLE OF A PLANT

2

We study what germination, pollination and seed dispersal is and why these are important to the life cycle of a plant.

OUR SCIENCE EXPERIMENT

3

We plant a number of gladioli bulbs so that we can keep on ongoing record of heights of plants. We make simple predicitions about the plants i.e. how much they will grow etc.

WHAT DO PLANTS NEED TO GROW?

4

We find out about one of the things that plants need to grow (sunlight) and then we start a comparative experiment to find out how a plant will grow in different places in the classroom.

RECORDING OUR FINDINGS

5

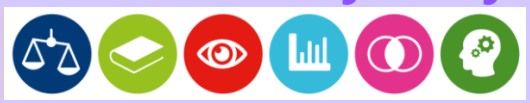
We record the results of our Gladioli investigation and discuss our findings. .

Vocabulary taught:
biology, Leaves, trunk, branch, root, seed, bulb, flower, stem, wild, garden, deciduous, evergreen, observe, grow, compare, record, temperature, predict, measure, diagram, germinate, warmth, sunlight.

SCIENCE IN YEAR 2

Summer 1 - Biology - Animals including humans

How do humans stay healthy?



LIFE CYCLE OF A CHICKEN

1

we learn all about the life cycle of a chicken and focus on each stage of the cycle, from egg, embryo, hatching, chicks, chicken.

LIFE CYCLE OF A HUMAN

2

we learn all about the life cycle of a human and focus on each stage of the cycle: baby, toddler, childhood, adolescence, adulthood, and old age

WHAT DO WE NEED TO SURVIVE?

3

We investigate what is a basic need and a want and how humans need to fulfill basic needs in order to survive and grow strong and healthy.

THE IMPORTANCE OF EXERCISE

4

We investigate why exercise makes the heart work and become strong and why warming up before exercise is important. We learn all about how to keep our heart healthy.

HEALTHY EATING

5

We research what makes a healthy diet and why this is important for humans throughout their life. We also find out why we have different food groups and the importance of a balanced diet.

THE IMPORTANCE OF HYGIENE

6

We find out why it is so important to stay clean! We study what germs and bacteria are and how they can be spread.

Vocabulary taught:
biology, Leaves, trunk, branch, root, seed, bulb, flower, stem, wild, garden, deciduous, evergreen, observe, grow, compare, record, temperature, predict, measure, diagram, germinate, warmth, sunlight.

SCIENCE IN YEAR 3

Autumn 1 - Biology - Plants

What are the different parts and functions of a flowering plant?

FLOWERING PLANTS

1

we identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers and the job that they do.

WHAT IS POLLINATION?

2

we explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

SEED FORMATION & DISPERSAL

3

we explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

LIFE CYCLE OF A PLANT

4

We descibe the detailed life cycle of a flowering plant, including everything we have learned in previous lessons, and describing why plants are so important to the world and our ecosystems.

5

Vocabulary taught:
biology, Air, light, water, nutrients, soil, support, anchor, reproduction, pollination, dispersal, transportation, flower, energy, growth, seedling, carbon dioxide, oxygen, sugar, material, photosynthesis, chlorophyll

SCIENCE IN YEAR 3

Autumn 2 - Biology - systems of the body

What systems can be found in the human body?

A BALANCED DIET

1

we recap and explain the importance of having a healthy, balanced diet and the effect on the human body. We look at different food groups and what having an unhealthy diet does to the human body.

ANIMALS AND THEIR DIET

2

we recap what a herbivore/carnivore/omnivore is then we have a debate - which lifestyle is the best and why? We carry out some research on how long carnivorous animals/ herbivore live and create a bar chart to show this.

THE HUMAN SKELETON

3

we learn the names of bones and joints in the human skeleton and identify the roles of different bones in the skeleton of vertebrates. We also describe what would happen if humans did not have a skeleton, muscles or joints.

THE IMPORTANCE OF THE VERTEBRAE

4

We identify and group animals with and without skeletons and compare the ways in which they move. We also look at animals that have exoskeletons and why they are a different group.

THE MUSCULAR SYSTEM

5

We learn all about the muscular system and describe how muscles contract and relax to create movement. We then observe changes in our own muscles and compare the size of muscles bent and straight arms

Vocabulary taught:
biology, Nutrients, nutrition, carbohydrates, protein, fats, vitamins, minerals, water, fibre, skeleton, bones, joints, endoskeleton, exoskeleton, hydrostatic skeleton, vertebrates, invertebrates, muscles, contract, relax,

SCIENCE IN YEAR 3

Spring 1 - Chemistry - Rocks

What can be find out from studying fossils?

HOW ARE FOSSILS FORMED?

1

we describe in simple terms how mould and cast fossils are formed after an animal or plant has died and its parts have decayed. The skeleton is covered with sand, earth, rock or seabed before the bones can disappear. Over a very long time, the bones break down and leave a space in the earth, like an empty mould.

WHAT BECOMES A FOSSIL?

2

we research and discuss some different types of living things whose remains have become fossils inside sedimentary rock. We learn that fossils are rare and often incomplete and make a drawing of what the organisms might have looked like when it was alive

PROPERTIES OF ROCKS

3

we look at a range of different types of rocks, including man made and use a hand lens to look at the selection of rocks. We make observational drawings and describe what we see using scientific words.

INVESTIGATING ROCKS

4

We investigate the properties of rocks. We predict and then observe whether 8 different rocks can be scratched with a nail, are porous, or can float in water. We then use our results to create and label a Venn diagram.

WHAT IS SOIL MADE UP OF?

5

Using hand lenses, we explore two different soil samples. We identify differences and similarities, looking at layers of sand, plant parts, water and minibeasts and then create an observational drawing and write a description of each sample.

Vocabulary taught:
chemistry, sedimentary, metamorphic. igneous, plate tectonics
core, crust, mantle, texture, colour, properties, chalk, granite, crystals, grains, sediments, eroding, weathering.

SCIENCE IN YEAR 3

Spring 2 - Biology - Plants

How is water transported in plants?

WHAT DO PLANTS NEED?

1

we recap and explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant

WHY DO PLANTS HAVE LEAVES?

2

We research and discuss how leaves help plants collect sunlight, which they can then turn into energy (food) through a process called photosynthesis. Their flatness helps them in this task and they are thin to allow the sunlight easy entry into their cells. Leaves come in many shapes, sizes and colours

HOW IS WATER TRANSPORTED WITHIN PLANTS?

3

We learn about the movement of water in plants is driven by a process called transpiration. This is where water evaporating from the leaves of a plant causes the plant to draw up more water from the roots. Water moves up the stem by capillary action this is where water molecules seemingly 'stick' together.

INVESTIGATING TRANSPIRATION

4

We carry out an experiment to show how the transpiration process works. We use celery to see how plants 'suck up' water and record the results over time.

SIGNIFICANT SCIENTIST STUDY

5

We research Henry Horatio Dixon and how he discovered transportation through the study of plants.

Vocabulary taught:
biology, Air, light, water, nutrients, soil, support, anchor, reproduction, pollination, dispersal, transportation, flower, energy, growth, seedling, carbon dioxide, oxygen, sugar, material, photosynthesis, chlorophyll

SCIENCE IN YEAR 3

Summer 1 - Physics - Forces and Magnets

Why are magnetic forces so important?

1 WHAT IS A FORCE?

We learn that a force is an action that changes or maintains the motion of a body or object. Simply stated, a force is a push or a pull. Forces can change an object's speed, its direction, and even its shape.

2 WHAT AFFECTS FORCE?

We research and discuss how different factors affect how forces work. We look at how a range of surfaces can affect how an object moves a given amount. We carry out a simple experiment to measure force.

3 WHAT IS MAGNETIC?

We compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. We then predict and test a range of materials and draw conclusions from our findings.

4 HOW DO FORCES ACT?

We learn that some forces need contact between two objects, but magnetic forces can act at a distance. We look at which magnets are the strongest. We carry out simple experiments to test this and draw conclusions from our findings.

.

5 ATTRACT OR REPEL?

We predict and test whether two magnets will attract or repel each other, depending on which poles are facing.

6

Vocabulary taught: physics, Force, push, pull, friction, surface, magnet, magnetic, magnetic field, pole, north, south, attract, repel, compass

SCIENCE IN YEAR 3

Summer 2 - Physics - Light

Why do we need light?

WHAT IS A LIGHT SOURCE?

1

We identify light sources and recognise that they need light in order to see things and that dark is the absence of light

HOW DOES LIGHT MOVE THROUGH OBJECTS?

2

We explore the question: How much light passes through different objects? We investigate and sort materials into transparent', 'translucent' and 'opaque' and test if light can pass through different objects made from these materials. We then discuss our results and record in a table the findings.

SHADOWS

3

e learn about and explain how shadows are made , by blocking the ht. We explain that light travels in straight lines and this is how adows can be changed. We then use torches to discover how to make adows smaller, larger, change position.

WHY DO SHADOWS CHANGE?

4

We research how shadows from the sun change during the day and carry out our own investigation by drawing shadow outlines over the course of a day and record what we find.

HOW LIGHT IS REFLECTED

5

We learn what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help us to answer questions about how light behaves. We also explore concave and convex mirrors.

LIGHT FROM THE SUN

6

We discuss why it is important to protect our eyes from bright lights, especially to light from the sun. We explore which materials would block the sun's rays but still let us see? We recap transparent / transluscent/ opaque to help us decide on the best way to protect our eyes when we are outside.

Vocabulary taught: physics, Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent.

SCIENCE IN YEAR 4

Autumn 1 - Physics - Electricity

Can electricity be dangerous?

WHAT IS ELECTRICITY?

1

We learn what electricity is and what are its sources. We then research where electricity comes from and the difference between mains electricity and batteries.

CIRCUITS & COMPONENTS

2

We explore that electricity needs a circuit to work and that the circuit needs a power source. We investigate different components of a circuit (battery, wires, light bulb) and try to make our own complete circuits.

HOW DOES A LIGHT BULB WORK?

3

We explore the question: How does a light bulb work in a circuit? By using prior knowledge about circuits, we investigate adding a light bulb to a circuit and making it light up by making a complete circuit.

CONDUCTORS AND INSULATORS

4

We investigate which materials allow electrcitiy to pass through them and which ones block electricity. We then experiment with a range of materials to test if they are conductors or insulators.

CREATING SWITCHES

5

Using a battery, wires, crocodile clips and a bulb or buzzer, we experiment with a variety of items (e.g. paper clips, butterfly clips, pins, etc.) to create a switch that will work in a circuit to turn it off and on.

6

Vocabulary taught:
Physics, Electricity, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, component.

SCIENCE IN YEAR 4

Autumn 2 - Biology - living things and their habitats

Why is classification so important?

1 CLASSIFICATION

We learn how plants and animals can be grouped in different ways and recap the characterisitcs of Vertebrates, insects, birds, mammals, fish, amphibians and reptiles.

2 CLASSIFICATION KEY

We explore what a classification key is and when they are used. We research a range of animals and create our own classification key.

3 CLASSIFICATION AND HABITATS

We investigate a given habitat and state a number of animals that live there. We also investigate an animal that wouldn't thrive in that environment and ask a friend to work out which animal is the odd one out and why. We then write a sentence/paragraph to explain why that animal wouldn't survive there.

4 CHANGING HABITATS

We research how the rainforest has changed over time due to human intervention and what impact this has had on the habitats found there.

5 SIGNIFICANT SCIENTIST STUDY

We study the life of Wangari Maathai and how her work influenced habitats and the animals that live in them.

Vocabulary taught:
biology, Environment, flowering, nonflowering, plants, animals, vertebrates, fish, amphibians, reptiles, mammals, invertebrate, human impact, nature reserves, deforestation.

SCIENCE IN YEAR 4

Spring 1 - Biology - Animals including humans

Why do we need to look after our teeth?

DIFFERENT TYPES OF TEETH

1

We learn about and identify the different types of teeth in humans (incisors, molars canines and wisdom teeth) and their simple functions.

WHAT DAMAGES TEETH?

2

We carry out an experiment to show how teeth can be damaged and discuss what causes damage i.e. sugar etc especially when this is over a long period of time.

PRODUCERS, PREDATORS AND PREY

3

We investigate what animals are producers, predators and prey and research different food chains and how teeth play a part in these chains.

THE DIGESTIVE SYSTEM

4

We name and describe the simple functions of the digestive system in humans: the mouth, tongue, teeth, oesophagus, stomach and small and large intestine.

THE DIGESTIVE SYSTEM EXPERIMENT

5

We carry out an experiment to see how food passes through the 9 metres of the digestive system! We then record and analyse our findings.

Vocabulary taught:
biology, Herbivore, Carnivore, Digestive system, tongue, mouth, teeth, oesophagus, stomach, gall bladder, small intestine, pancreas, large intestine, liver, tooth, canine, incisor, molar, premolar, producer, consumer.

SCIENCE IN YEAR 4

Spring 2 - Physics - Sound

How are sounds made?

HOW ARE SOUNDS MADE?

1

We learn about and identify how sounds are made, associating some of them with something vibrating

WHAT IS VIBRATION?

2

We learn about and recognise that vibrations from sounds travel through a medium to the ear.

WHAT IS PITCH?

3

We investigate and find patterns between the pitch of a sound and features of the object that produced it

VOLUME

4

We describe and find patterns between the volume of a sound and the strength of the vibrations that produced it.

THE STRENGTH OF SOUND

5

We learn about and recognise that sounds get fainter as the distance from the sound source increases.

Vocabulary taught:
Physics, Amplitude, volume, quiet, loud, ear, pitch, high, low, particles, instruments, wave.

SCIENCE IN YEAR 4

Summer 1 - Chemistry - States of matter

Why is the world made up of solids, liquids and gases?

1 SOLID, LIQUID OR GAS?

We learn about and classify a range of solids, liquids and gases, including jelly and shaving foam. We then investigate the compund oobleck and decide, is it a solid liquid or gas?

2 STATES OF MATTER

We learn about and observe different states of matter and say whether they are solid, liquid or gas by carrying out a range of experiments.

3 WHAT HAPPENS WHEN YOU ADD HEAT?

In a comparative test we look at different sized ice blocks and compare how long they take to melt over the course of the day. We record our observation in a bar graph. We also record the freezing temperature and melting temperature of water.

4 THE WATER CYCLE

We learn about and investigate evaporation and condensation through measuring how water left on the windowsill changes throughout the day.

5 SALT OR FRESH WATER?

We compare the evaporation of saltwater and freshwater by repeating the previous experiment and recording the evaporation and condensation rates over time.

6 SIGNIFICANT SCIENTIST STUDY

We research Anders Celcius (Celcius Temperature Scale) Daniel Fahrenheit (Fahrenheit Temperature Scale / Invention of the Thermometer) and how their findings made a signficant impact on the development of science.

Vocabulary taught: chemistry, Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy,

SCIENCE IN YEAR 5

Autumn 1 - Biology - Living things & their habitats

How do plants and animals reproduce?

LIFE CYCLE OF A PLANT

1

We learn to dissect and label the parts of a flowering plant, including male and female structures and we record our findings. We also look at the reproduction in non flowering plants

ASEXUAL REPRODUCTION

2

We learn about processes of natural and artificial asexual reproduction in plants . We then investigate artificial forms of asexual reproduction in plants and carry out a propagation investigation.

LIFE CYCLE OF A BIRD

3

We recap that animals and humans have offspring that grow into adults, then we create zoological illustrations and draw and annotate the life cycle of two different birds. We identify the main stages: egg, fledgling, adult.

INSECT & AMPHIBIAN LIFE CYCLES

4

We learn about the lifecycle and reproduction of amphibians and insects and sketch a detailed & annotated zoological illustration of the lifecycle and reproduction of an amphibian and insect.

COMPARING LIFE CYCLES

5

We compare the length of lifecycles of chosen animals/mammals and present the data in graphical form.

Vocabulary taught:
biology, Reproduction, Sexual, Asexual, Pollination, Dispersal, reproduction, cell, fertilisation, pollination, male, female, pregnancy, young, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant

SCIENCE IN YEAR 5

Autumn 2 - Chemistry - Changes & properties of materials

Why do materials have different properties?

PROPERTIES OF MATERIALS

1

We learn to distinguish between different properties of materials, such as permeability, absorbency, hardness, solubility, transparency, conductivity (electrical & thermal) and response to magnets.

TESTING SOLUBILITY

2

We learn that some materials will dissolve in liquid to form a solution then we investigate a group of materials on the basis of their solubility.

SIEVING TO SEPARATE

We investigate the effectiveness of different materials to separate sand and rice from paper clips and record our findings to draw a conclusion.

3

FILTERING

4

We learn about how some materials can be separating by filtering them. We carry out our own investigations using filter paper to separate sand and water.

Secondly we filter sugar and water and discuss the solution and evaporation process .

FILTERING PART 2

5

We learn that sand is insoluble which means that it doesn't dissolve when mixed with water and that if a material is soluble in liquid, a solution will be created and the material and the liquid become one new material. If it is insoluble a mixture of the two materials is created. We carry out an investigation to create our own filter and using muddy water from a bucket we find out which group can get their water the cleanest.

Vocabulary taught:
chemistry, hardness, Solubility, filter, evaporation, dissolving, mixing material, dissolve, insoluble, suspension, chemical, physical, solution, separate, mixture, permeable, soluble, property

SCIENCE IN YEAR 5

Spring 1 - Chemistry - Changes & properties of materials

Can changes always be reversed?

1 EVAPORATION

We learn about evaporation and how this can separate mixtures. We then carry out an experiment to test how mixtures can be separated by heating up the mixture to create the evaporation process.

2 REVERSIBLE & IRREVERSIBLE CHANGES

We investigate whether it is possible to change materials into completely different ones by carry out an investigation by adding baking powder to vinegar . Has a new substance has been made?

3 THERMAL CONDUCTORS

We learn that some materials allow heat to pass quite easily through them. We find out that we can use conductors to move heat, for example, radiators are made from metal. We investigate this theory with how to melt ice quickly!

4 THERMAL INSULATORS

We recap last lesson and discuss that there are materials that do not allow heat to pass through quickly and these are called thermal insulators. An example of this is a thermos flask

5 ELECTRICAL CONDUCTORS AND INSULATORS

We have looked at how heat passes through or is blocked by different materials but what about how electricity passes through things? Why would we need to stop electricity from passing through materials? We find out which materials are the best electrical conductors and insulators and why this is important in our everyday lives.

Vocabulary taught:
chemistry, hardness, conductivity, magnetic, evaporation, mixing material, conductor, chemical, physical, irreversible, solution, reversible, separate, mixture, insulator, flexible, permeable, soluble, property, magnetic

SCIENCE IN YEAR 5

Spring 2 - Physics - Forces

How does gravity work?

GRAVITY

1

We investigate the effect of gravity on unsupported objects. We learn about Isaac Newton's and his role in discovering gravity then we accurately measure the force of gravity pulling on objects.

AIR RESISTANCE

2

We identify the effects of air resistance by investigating the best parachute to slow a person down.

WATER RESISTANCE

We identify the effects of water resistance by creating and racing streamlined boats.

3

FRICTION

We identify the effects of friction by investigating how brakes work.

4

MARVELLOUS MECHANISMS

We learn that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect by exploring and designing a simple mechanism.

5

6

Vocabulary taught: physics, air resistance, water resistance, friction, gravity, Newton, gears, pulleys, force, push, pull, opposing, streamline, brake, mechanism, lever, cog, machine, pulley.

SCIENCE IN YEAR 5

Summer 1 - Biology - Animals including humans

How does my body change as I get older?

THE HUMAN LIFECYCLE

1

We learn about the human life cycle and what happens as we grow and get older.

GESTATIONAL PERIODS

2

We research the gestational periods of different animals, including humans and comapre these times and the similarities and differences we find.

PUBERTY

3

We discuss body changes at puberty in both male and female and find out about menstruation.

Vocabulary taught:
biology, foetus, embryo, womb, gestation, baby, toddler, teenager, elderly, growth, development, puberty, hormone, physical, emotional

SCIENCE IN YEAR 5

Summer 2 - Physics - Earth and Space

What is our place in the Solar system?

SPHERICAL BODIES

1

We learn about the Sun, Earth and Moon as approximately spherical bodies by understanding how this knowledge has been attained. We look at scientific evidence that has been used to support or refute ideas or arguments in the context of how ideas changed from a flat earth view.

THE PLANETS

2

We learn about the movement of the Earth, and other planets, relative to the Sun in the solar system by learning the order of the plants and how they move in the solar system.

GEOCENTRIC VERSUS HELIOCENTRIC

3

We learn about movement of the Earth, and other planets, relative to the Sun in the solar system by examining the geocentric and heliocentric theories.

NIGHT AND DAY

4

We explore the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky by examining why the sun appears to move and the arguments for the Earth's rotation.

MOVEMENT OF THE MOON

5

We explore the movement of the Moon relative to the Earth by explaining how the Moon orbits the Earth

6

Vocabulary taught:
physics, earth, sun, moon, axis, rotation, day, night, phases of the Moon, star, constellation, waxing, waning, crescent, gibbous. Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, planets, solar system, day, night, rotate, orbit, axis, spherical, geocentric, heliocentric.

SCIENCE IN YEAR 6

Autumn 1 - Physics - Electricity

How can bulbs get brighter in a circuit?

SIMPLE CIRCUITS

1

We discuss the importance of electrical circuits in everyday life, then construct and draw with symbols a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers and then answer the question: what happens when we try different components in our circuit?

VOLUME

2

We learn about and test how the volume of a buzzer can change with the number of cells used in the circuit.

BRIGHTNESS

3

We learn about, compare and give reasons for variations in how components function, including the brightness of bulbs.

VOLTAGE

4

We explore how the brightness of a lamp or the volume of a buzzer can change with the voltage of cells used in the circuit

CIRCUITS IN EVERYDAY LIFE

5

We discuss and make circuits to solve a particular problem, such as a quiet and a loud burglar alarm.

Vocabulary taught:
physics, electricity,, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, conductor.

SCIENCE IN YEAR 6

Autumn 2 - Biology - Animals including humans

How can diet and exercise impact the body's systems?

SKELETAL, MUSCULAR AND DIGESTIVE SYSTEM

1

We learn about the main body parts and internal organs and answers questions about how the human body functions.

CIRCULATORY SYSTEM

2

We identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood

HEALTHY BODIES

3

We learn about and recognise the impact of diet, exercise, drugs and lifestyle on the way our bodies function.

DAMAGED BODIES

4

We learn how bodies might be damaged – including how some drugs and other substances can be harmful to the human body

NUTRIENTS

5

We describe the ways in which nutrients and water are transported within animals, including humans

6

Vocabulary taught:
biology, circulatory, digestive, muscular, system, heart, lungs, blood, organ, vessel, damage, transport, nutrient, function

SCIENCE IN YEAR 6

Spring 1 - Biology - Living things and their habitats

Why are animals and humans classified in groups?

1 CLASSIFICATION

We learn about and describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals

2 VERTEBRATES

We learn about the animals, including humans that have a backbone and are classed as vertebrates. We look at the importance of a backbone in terms of movement and bodily function.

3 INVERTEBRATES

We identify and name the animals that are classed as invertebrates and the similairites and differences between the groups: fish, amphibians, reptiles, birds and mammals. We also dicuss the importance of an exoskeleton

4 INVESTIGATING GROUPS

Using classification systems and keys, we research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.

5 SIGNIFICANT SCIENTIST

We find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.

6

Vocabulary taught:
biology, variation organisms, classification characteristics environment, fish, amphibians, reptiles, mammals, classify, compare, bacteria, micro-organism, invertebrates, vertebrates, Linnaean.

SCIENCE IN YEAR 6

Spring 2 - Biology - Evoluation and inheritance

How have living things evolved over time?

WHAT IS EVOLUTION?

1

We learn that the process by which living things can gradually change over time is called evolution. We study how animals have evolved over time and explore how the woolly mammouth has evolved into the elephant we know today.

INHERITANCE

2

We learn that when living things reproduce they pass on characteristics to their offspring. We also learn that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. We then ask the question, why are some things inherited?

ADAPTATION

3

We learn that living things have changed over time and look at the scientific evidence to show these changes over time for different species.

SIGNIFICANT SCIENTIST

4

We research Charles Darwin and this theories on evolution and that he is known for his theory of evolution by natural selection. According to this theory, all living things are struggling to survive. The living things that have the most helpful traits for their environment tend to survive. These living things then pass along their helpful traits to their young.

SURVIVAL

5

We find out about how species have adapted over time in order to survive and how some species have become extinct and why.

Vocabulary taught:
chemistry, fossils, adaptation, evolution, characteristics, reproduction, genetics, variation, inherited, environmental, competition, survival of the Fittest, evidence

SCIENCE IN YEAR 6

Summer 2- Physics - Light

How does light travel?

HOW DOES LIGHT TRAVEL?

1

We learn that light appears to travel in straight lines and we use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.

HOW DO WE SEE THINGS?

2

We learn that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. We design and make our own periscopes to test this theory.

SHADOWS

3

We use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

COLOUR IN LIGHT

4

We research the phenomenon of rainbows and how they occur and why we can see different colours. We then compare this to the colours seen on soap bubbles.

REFRACTION

5

We find out about the science behind why objects look bent in water and what is happening in terms of light and how we view things.

Vocabulary taught:
physics, light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent, reflect, absorb, emitted, scattered, refraction